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(57) Abstract: The determination and use of three dimensional structures of receptor protein tyrosine kinases and/or their ligands are described. One particular group of such structures includes three dimensional structures of the extracellular domain of RPTKs. The three dimensional structures of RPTKs can faciliate the design and identification of modulators of RPTK function. Other such structures can include of RPTK ligands, such as stem cell factor or a fragment thereof. Modulators of RPTK function can be used to treat diseases that are mediated by inappropriate RPTK activity.